

IN THE DRAWINGS

Please replace FIG. 4 with the attached new replacement sheet for FIG. 4.

REMARKS

The Office Action dated November 25, 2008 has been received and carefully noted. The above amendments to the specification, claims, the new replacement sheet for FIG. 4, and the following remarks, are submitted as a full and complete response thereto.

The Specification and Figures have been amended to more accurately describe the invention. Claims 1-8 and 11-15 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claims 9 and 10 have been canceled without prejudice or disclaimer. No new matter has been added and no new issues are raised which require further consideration or search.

The Office Action has objected to the drawings for failing to comply with 37 CFR 1.84(p)(5) because they include reference characters that are not mentioned in the specification. In particular, the Office Action has pointed to drawing elements 111, 121, 145 and 146 of FIG. 4 as failing to be supported by the specification.

In response to the Objection, Applicants have removed those reference numerals 111, 121, 145 and 146 from FIG. 4 thus rendering the objection moot. Withdrawal of the objection is kindly requested.

The Office Action has rejected claims 3 and 10 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to describe how the workpiece is brought to a hot temperature. The Office Action has also noted that the translated claim recitations are not entirely clear and has suggested amending the claims to correct these informalities.

Applicants have amended the claims to address the objection to claim 3 by noting that the workpiece is heated due to forming heat. In addition, other claim amendments have been made to each of the pending claims to clarify the operations and features of each of claims 1-8 and 11-15. Applicants submit that all currently pending claims are grammatically sound and are in compliance with 35 U.S.C. §112, second paragraph. Withdrawal of the rejection is kindly requested.

Claims 1, 3, 7-10 and 12 were rejected under 35 U.S.C. §102(b) as being anticipated by Minami (U.S. 3,841,126). The Office Action alleged that Minami discloses all of the features recited in the above-noted claims including independent claims 1 and 7. This rejection is respectfully traversed.

Claim 1, upon which claims 2-6 are dependent, recites a forging method that includes a plurality of press operations to form a product. The method includes spraying a workpiece with lubricant more than once, the workpiece already having been heated due to a machine related earlier press operation prior to a press operation of forming the workpiece is conducted. At least one of the spraying with lubricant operations being conducted when the lubricant sprayed in a preceding spraying operation has been dried. In addition, after the lubricant sprayed in a final spraying of said workpiece has been dried, the method also includes forming the workpiece via the press operation.

Claim 7, upon which claims 8 and 11-15 are dependent, recites a forging apparatus that includes an extruding apparatus that comprises a plurality of press stages. A workpiece is successively transferred to the plurality of press stages of the extruding

apparatus. The apparatus also includes a conveying unit for successively transferring the workpiece comprises a plurality of nozzles for spraying the workpiece with lubricant. The workpiece and the plurality of nozzles are located in fixed relative positions with respect to each other in spraying the workpiece with the lubricant. The lubricant is sprayed from the plurality of nozzles in different directions, and the nozzles spray the lubricant in a sequential fashion. After the lubricant sprayed from the plurality of nozzles has been dried, more lubricant is again sprayed from the nozzles or after the lubricant sprayed from one of the nozzles has been dried, more lubricant is again sprayed from another of the nozzles.

As will be discussed below, the disclosure of Minami fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above. The rejection is respectfully traversed for at least the following reasons.

Minami discloses a method of lubricating a workpiece (wire) in a warm forging process. Referring to FIG. 1 and columns 5 and 6 of Minami, the details of FIG. 1 are disclosed in detail. A workpiece (wire) 1 is fed to a bending roller 4 and is then provided to a brush roller 5, which descales the wire. Nozzle(s) 6 then dusts of the debris from the wire, which is then fed to a lubricant spark preventer 9, which provides a spark preventer substance via a “bath” process (i.e., not a spraying operation) (see column 5, line 44 of Minami). The wire is then shaved via shaver 10, winded-up via winder 16, straightened via straightening device 18, and heated up via heaters 19 and 20. The wire is then sprayed with lubricant via one or more of nozzles 34.1, 34.2 and 34.3 of spraying unit 34.

Nozzle 34.2 is used to replace/supplement nozzle 34.1 when spraying lubricant on the wire 1. Nozzle 34.3 serves to apply lubricant to the cut surface of the material and the engaging pieces of the punches 26 and 26' (see FIG. 3 and column 6, lines 35-40 of Minami). The nozzles 34.1, 34.2 and 34.3 appear to spray lubricant onto the workpiece in a continuous and otherwise joint spraying procedure. In other words, Minami does not disclose "at least one of the spraying with lubricant operations being conducted when the lubricant sprayed in a preceding spraying operation has been dried", as recited, in part, in independent claim 1.

When a workpiece is formed, the workpiece takes on processing heat. Consequently, the temperature of the workpiece naturally rises, as is well established to those having ordinary skill in the art. In this regard, the specification clearly discloses beginning on line 27 of page 11 and continuing to line 9 of page 12, that the workpiece W is heated to approximately 200 degrees C due to forming heat. Thus, in the present application, the temperature of the workpiece naturally rises, and the temperature of the workpiece does not rise by performing an explicit heating operation.

The present application utilizes cold forging, as described in paragraphs [0001] to [0007] of the specification. In contrast, Minami discloses warm forging (see lines 11-14 of column 1, and lines 55 and 56 of column 2 of Minami). Thus, Minami does not disclose a comparable procedure to the cold forming operation performed by the present application. Additionally, according to lines 16-38 of column 6 in Minami, (as relied upon by the Office Action), a nozzle 34.1 serves to lubricate a die, a nozzle

34.3 serves to apply a lubricant to “punches”, and 34.2 is not usually used and is an emergency spare.

Minami neither discloses nor suggests that a same workpiece undergoes spraying with lubricant more than once, and that the spraying with lubricant is conducted when the lubricant sprayed in a preceding spraying has been dried. Therefore, Minami fails to disclose or suggest “at least one of the spraying with lubricant operations being conducted when the lubricant sprayed in a preceding spraying operation has been dried”, as recited, in part, in independent claim 1.

As for claim 7, the subject matter of claims 9 and 10 has been cancelled and incorporated into independent claim 7. Referring to claim 7, it is recited that “the workpiece and the nozzle are located in fixed relative positions with respect to each other in spraying the workpiece.” Referring to the specification of the present application, the “fixed” positions is referring to the single workpiece “W” and the lubricant nozzles N1 and N2 being fixed to the respective first and second feed bars 30 and 32. In addition, this positioning provides an analogous situation to a “stationary object” being sprayed (see page 11, lines 20-28 of the specification).

Minami fails to disclose or suggest “wherein lubricant is sprayed from the plurality of nozzles in different directions, and the nozzles spray the lubricant in a sequential fashion, and after the lubricant sprayed from the plurality of nozzles has been dried, more lubricant is again sprayed from the nozzles or after the lubricant sprayed from one of the nozzles has been dried, more lubricant is again sprayed from another of

the nozzles”, as recited, in part, in independent claim 7. As noted above, Minami fails to disclose waiting for the lubricant to dry prior to performing another spraying operation. Therefore, Applicants submit that Minami fails to disclose all of the subject matter of independent claims 1 and 7. By virtue of dependency, Minami also fails to disclose all of the subject matter of those claims dependent thereon. Withdrawal of the rejection of claims 1, 3, 7, 8 and 12 is kindly requested.

Claims 2, 5, 6, 11, 14 and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Minami as applied to claims 1 and 7 above, and further in view of Nagao (U.S. 2003/0213277). The Office Action took the position that Minami discloses all of the features of the claims except for a constant-velocity universal joint outer race or other features of the rejected claims. The Office Action then relied on Nagao to cure the deficiencies of Minami. This rejection is respectfully traversed.

Nagao discloses a forging die apparatus that includes a punch for applying a pressurizing force to a forging material arranged in a cavity. A cylindrical member is installed to surround a part of the outer circumference of the punch to provide displacement with the punch. The apparatus also includes a first ring member formed with a hole for forcibly inserting the cylindrical member into the hole when the punch applies a pressurizing force to the forging material.

Nagao does not disclose “at least one of the spraying with lubricant operations being conducted when the lubricant sprayed in a preceding spraying operation has been dried”, as recited, in part, in independent claim 1 and similarly in independent claim 7.

Therefore, because Nagao fails to cure the deficiencies of claims 1 and 7 with respect to Minami, then, Nagao also fails to disclose the features of claims 2, 5, 6, 11, 14 and 15 which are dependent on independent claims 1 and 7.

Claims 4 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Minami as applied to claims 1 and 7 above, and further in view of Graham (U.S. 5,493,886). The Office Action took the position that Minami discloses all of the features of the claims except for a water dispersive lubricant. The Office Action then relied on Graham to cure the deficiencies of Minami. This rejection is respectfully traversed.

Graham discloses a method to lubricate a metal workpiece at elevated temperatures by employing a polymer lubricant. The lubricant is provided with a liquid mist of a vaporizable and polymerizable organic reactant being supplied to both a workpiece and a forming die at elevated working temperatures. Graham does not disclose “at least one of the spraying with lubricant operations being conducted when the lubricant sprayed in a preceding spraying operation has been dried”, as recited, in part, in independent claim 1 and similarly in independent claim 7. Therefore, Graham does not cure the deficiencies of claims 1 and 7 with respect to Minami, then, Graham also fails to disclose the features of claims 4 and 13 which are dependent on independent claims 1 and 7.

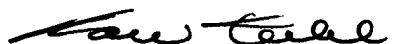
For at least the reasons discussed above, Applicants respectfully submit that the cited references fail to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated

and unobvious. It is therefore respectfully requested that all of claims 1-8 and 11-15 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



Kamran Emdadi
Registration No. 58,823

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Vienna, Virginia 22182-6212
Telephone: 703-720-7800
Fax: 703-720-7802

KE:sjm